CSC320 Discussion Forum 4

Hello all,

The main constructs of a loop are a start, an end, an argument, and a parameter. Some condition will set up the loop and the loop will iterate through the argument. The argument will be checked against the parameter’s setup and while it’s true, the loop will continue. Each cycle through the loop, the argument will be updated and run again, thus making forward progress through the loop. When the parameter is false the loop will end. There are circumstances where a parameter may always be true until a false condition is introduced, this is where infinite loops may become a problem if not coded correctly. It’s also important to note that the parameter may be checked first or last, depending on what type of loop is being used. A while loop checks the parameter first, whereas a do-while loop checks the parameter last.

For loops are great when the number of iterations and the termination point are both known. An example would be iterating through a list. An integer variable\_one can be set to an integer five. The for loop can use the variable as the parameter and set to start at variable\_one equaling one, then each iteration of the loop would perform variable\_one plus one, so that it’s counting upwards. An argument would also be defined based on variable\_one, stating that the initial value for variable\_one is the limit. The syntax would look something like this:

Syntax: for(initialization ; test expression ; update)

public class Main {

public static void main(String[] args) {

int maxNum = 5;

for (int i = 1; i <= maxNum; i++) {

System.out.println(i);

}

}

}

A while loop would be utilized when the termination point is known, but the number of iterations is unknown. A great example would be trying to find the number at the nth position of the Fibonacci sequence. Due to the nature of the sequence, a user will most likely not know what number is in that position. For this example, there would need to be some setup prior to creating the for loop, such as creating a method utilizing a formula for the sequence and initializing a few variables. After that’s done, a while loop can be setup to call the Fibonacci formula method, and checking it against a user input position. The loop would then iterate through until it reaches the nth position, input by the user. It would look something like this:

Syntax: while(test expression)

Public class Main {

Public static void main(String[] args) {

Scanner userInput = new Scanner(System.in);

System.out.print("Enter the Fibonacci position you’d like to find: ");

int fibonacciPosition = userInput.nextInt();

while(Fibonacci\_formula\_method < userInput) {

}

}

}